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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/923,530	08/07/2001	Lawrence D. Bergman	YOR920000742US1	2121

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Ryan, Mason & Lewis, LLP
90 Forest Avenue
Locust Valley, NY 11560

EXAMINER

TO, BAOQUOC N

ART UNIT	PAPER NUMBER
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2172

DATE MAILED: 10/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/923,530

Applicant(s)

BERGMAN ET AL.

Examiner

Baoquoc N To

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-49 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-49 are presented for examination.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 09/24/03. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cox et al. (US. Patent No. 5,696,964) and in view of Zhu et al. (US. Patent No. 6,584,465).

Regarding on claims 1, 25 and 49, Cox teaches a computer-based method of retrieving one or more items from at least one database in response to a query specified by a user via at least one example set, the method comprising the steps of:

Constructing a scoring function from the at least one example set, wherein the scoring function is operable for use with a multidimensional indexing structure associated with the at least one database (the probability of the user selecting an image

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is a linear function of the number of other displayed image that) (col. 6, lines 53-65);
and

Retrieving (selecting), via the multidimensional indexing structure, the one or more database items (images) that have the highest score as computed using the scoring function (col. 6, lines 36-40).

Cox does not explicitly teach scoring function is operable for use with a multidimensional indexing structure associated with the at least one database. However, searching and indexing is known in the art. In addition Zhu teaches, "in the index structure, the keys are organized in an efficient manner to facilitate later search. Any multidimensional index structure can be used for organizing the keys" (col. 8, lines 4-7). This teaches the searching and multidimensional indexing structure. Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention was made to modify the multidimensional indexing of Zhu into Cox in order to provide a intelligent searching system would allow the system to learn from the sample set and be able to use the using the multidimensional indexing structures for allowing faster retrieval process.

Regarding on claims 2 and 26, Cox teaches the scoring function is constructed from multiple example sets wherein the multiple sets comprise at least one of positive example sets and negative example sets (col. 6, lines 35-40).

Regarding on claims 3 and 27, Cox teaches the scoring function is constructed by combining respective scoring function of the multiple example sets (col. 6, lines 35-40).

Regarding on claims 4 and 28, Cox teaches combining the scoring functions of the positive example sets and the negative sets comprises the steps of:

Modifying the scoring functions of the positive example sets and the negative example sets so that the scoring functions of the positive example sets assign low scores to representative examples of the negative example sets, and so that the scoring functions of the negative example sets assign low scores to representative samples of the positive example sets (col. 6, lines 50-67); and

Combining the modified scoring functions of the positive example sets and the negative example sets (col. 6, lines 50-67).

Regarding on claims 5 and 29, Cox teaches the scoring function assign a score to an element of a search space associated with the at least one database equal to the minimum of: (1) the maximum of the scores assigned to the element by the scoring functions of the positive example sets (col. 6, lines 50-67); and (ii) the minimum of one minus the scores assigned to the element by the scoring functions of the negative example sets (col. 6, lines 50-67).

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Regarding on claims 6 and 30, Cox teaches the scoring function give higher scores to database items that are more closely related to the query than to the database items that are not as closely related to the query (col. 6, lines 50-67).

Regarding on claims 7 and 31, Cox teaches a scoring function is obtained for the at least one example set by:

Computing a characteristic example from the at least one example set (col. 6, lines 50-67);

Computing a dispersion characterization of the at least one example set in association with the characteristic example (col. 6, lines 50-67); and

Using the characteristic example, the dispersion characterization, and one or more samples from the database to compute the scoring function (col. 6, lines 50-67).

Regarding on claims 8 and 32, Cox teaches the characteristic example is a centroid, a median, or a node computed over at least a portion of the example set (fig. 4).

Regarding on claims 9 and 33, Cox teaches the dispersion characterization associated with the example set comprises a covariance matrix, a standard deviation, central moments, order statistic of differences, or third moments capturing asymmetry (col. 6, lines 50-67).

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Regarding on claims 10 and 34, Cox teaches the step of using the characteristic example, the dispersion characterization, and one or more samples from the database to compute the scoring function further comprises computing weight distances between the characteristic example and the one or more samples from the database using the dispersion characterization to compute weights (col. 6, lines 50-67).

Regarding on claims 11 and 35, Cox teaches weighted distances are Euclidean distances or Minkowsky distances (col. 6, lines 50-67).

Regarding on claims 12 and 36, Cox teaches a scoring function is computed for the at least one example set by converting one or more semi-metrics obtained using the at least one example set to one or more scores using a conversion function (fig. 3).

Regarding on claims 13 and 37, Cox teaches the semi-metrics are weighted Minkowsky distances from a representative samples in the at least one example set, and further wherein weights are calculated using the examples in the at least one example set (col. 6, lines 50-67).

Regarding on claims 14 and 38, Cox teaches weights are the inverse of standard deviations of the examples in the at least one example set (fig. 3).

Regarding on claims 15 and 39, Cox teaches the representative sample is a centroid of the examples in the at least one example set (fig. 4).

Regarding on claims 16 and 40, Cox teaches the conversion function is monotonically non-increasing continuous function having a value equal to one at the origin and a value of zero at infinity (col. 7, lines 10-15).

Regarding on claims 17 and 41, Cox teaches conversion function is a monotonically non-increasing continuous function having a value of one between zero and a first threshold value and a value of zero after a second threshold value (col. 7, lines 10-15).

Regarding on claims 18 and 42, Cox teaches the user specifies the number of items to retrieve from the database (col. 3, lines 39-43)

Regarding on claims 19 and 43, Cox teaches the retrieving step further comprises the step of searching the multidimensional indexing structure to retrieve from the database the items having the highest score (col. 6, lines 30-40).

Regarding on claims 20 and 44, Cox teaches the multidimensional indexing structure is used to execute different queries (col. 3, lines 39-43).

Regarding on claims 21 and 45, Cox teaches the multidimensional indexing structure is abased on a recursive partition of a search space associated with the database using hyperlanes parallel to coordinate axes or surfaces other than hyperlanes parallel to coordinate axes (two dimensional) (fig. 4).

Regarding on claims 22 and 46, Cox teaches searching the multidimensional indexing structure comprises the steps of:

Using scoring functions of the multiple example sets to search a tree to identify candidate nodes (col. 6, lines 50-67); and

Using the scoring functions of the multiple example sets to score items stored at leaves of the multidimensional indexing structure (col. 6, lines 50-67).

Regarding on claims 23 and 47, Cox teaches identifying candidate nodes comprises the steps of:

Computing for each scoring function of the positive example set, the maximum possible score of an item stored at the node or at one of the descendants of the node;

Computing the maximum of the maximum scores (col. 6, lines 50-67);

computing for each scoring function of the negative example sets, the minimum possible score of an item stored a the node or at one of the descendant of the node (col. 6, lines 50-67);

computing the minimum of : (i) the maximum of the maximum score; and (ii) the minimum of one minus the minimum scores (col. 6, lines 50-67);

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declaring that a node is a candidate if the minimum is not smaller than the minimum of the scores in the current result set (col. 6, lines 50-67); and

declaring that the node is no a candidate ortherwise (col. 6, lines 50-67).

Regarding on claims 24 and 48, Cox teaches the search is performed by using the scoring functions of the negative example sets (col. 6, lines 50-67).

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Baoquoc N. To whose telephone number is (703) 305-1949 or via e-mail BaoquocN.To@uspto.gov. The examiner can normally be reached on Monday-Friday: 8:00 AM – 4:30 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Y. Vu can be reached at (703) 305-4393.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231.

The fax numbers for the organization where this application or proceeding is assigned are as follow:

- (703) 746-7238 [After Final Communication}]
- (703) 746-7239 [Official Communication]
- (703) 746-7240 [Non-Official Communication]


Hand-delivered responses should be brought to:

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Baoquoc N. To
September 15, 2003


SHAHID ALAM
PRIMARY EXAMINER